

ABSTRACT OF THE DISCLOSURE

A novel isolated *Borrielia burgdorferi* sensu lato surface antigen is characterized by a relative molecular mass of 39.5 kDa. This antigen is expressed *in vitro* by spirochetes of a *B. burgdorferi* sensu lato strain. This antigen induces antibodies which kill spirochetes of a *B. burgdorferi* sensu lato strain by ADCK *in vitro*. Novel *Borrelia* cassette string protein or fragments thereof are also useful, as is the P39.5 protein in diagnosing Lyme disease and in compositions for treatment or prophylaxis thereof.